

## CLAIMS:

1. A circuit (1) having a converter (2) for converting an a.c. voltage into a d.c. voltage, which converter has a diode half-bridge (8) having two diodes (21, 26) and a first center terminal (9), a switch half-bridge (10) having two switches (24, 29) and a second center terminal (11), a high-frequency inductor (18) and two connections (12, 15) in series  
5 with the high-frequency inductor (18), for connection to a source (7) of mains voltage between the two center terminals (9, 11), a first d.c. rail (20) being connected to the first center terminal (9) by means of a first diode (21) in the diode half-bridge (8) and an electrically conductive connection (22) and to the second center terminal (11) by means of a first switch (24) in the switch half-bridge (10) and an electrically conductive connection (27),  
10 and a second d.c. rail (25) being connected to the first center terminal (9) by means of a second diode (26) in the diode half-bridge (8) and an electrically conductive connection (28) and to the second center terminal (11) by means of a second switch (29) in the switch half-bridge (10) and an electrically conductive connection (27), characterized in that the converter (2) has a second converter (3) for converting the a.c. voltage into a second d.c. voltage.  
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2. A circuit as claimed in claim 1, characterized in that the mains voltage source (7), an input (52, 53) of the converter (3), and the high-frequency inductor (18) form a series circuit.
- 20 3. A circuit as claimed in claim 1 and/or 2, characterized in that the transmission of energy in the converter (3) is frequency-dependent.
4. A circuit as claimed in claims 1 to 3, characterized in that the converter (3) is arranged between the high-frequency inductor (18) and the mains voltage source (7).  
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5. A circuit as claimed in claims 1 to 4, characterized in that the converter (2, 3) has a transformer (17).

6. A circuit as claimed in any of the foregoing claims 1 to 5, characterized in that the converter (2, 3) has a resonant capacitor (19).
7. A circuit as claimed in any of the foregoing claims 1 to 6, characterized in that the converter (2, 3) has an input capacitor (14).
8. A circuit as claimed in any of the foregoing claims 1 to 7, characterized in that the converter (2, 3) has a control means (5).
9. A circuit as claimed in claim 8, characterized in that the voltage at the input capacitor (14) is limited by the control means through a limitation of the duty factor of the switches (24) and (29).
10. A power supply system having a circuit (1) as claimed in any of the foregoing claims 1 to 9.
11. A video projection system having a power supply system as claimed in claim 10.
12. An office electronics or consumer electronics device having a power supply system as claimed in claim 10.